BEFORE

THE PUBLIC SERVICE COMMISSION

OF SOUTH CAROLINA

DOCKET NO. 2018-2-E

IN RE: Annual Review of Base Rates for Fuel Costs for South Carolina Electric & Gas Company	))))))	**SOUTH CAROLINA SOLAR BUSINESS ALLIANCE, INC.'S PROPOSED ORDER**

I. INTRODUCTION

This matter comes before the Public Service Commission of South Carolina (the "Commission"), on the annual review of the fuel purchasing practices and policies of South Carolina Electric & Gas Company, ("SCE&G" or the "Company"), for a determination as to whether any adjustment in the fuel cost recovery factors is necessary and reasonable. The procedure followed by the Commission in this proceeding is set forth in S.C. Code Ann. Section 58-27-865 (2015). Additionally, and pursuant to S.C. Code Ann. Section 58-39-140 (2015), the Commission must determine in this proceeding whether an increase or decrease should be granted in the fuel cost component designed to recover the incremental and avoided costs incurred by the Company to implement the Distributed Energy Resource ("DER") program previously approved by the Commission. The period under review in this Docket is January 1, 2017 through December 31, 2017 ("Review Period").

II. NOTICE AND INTERVENTIONS

By letter dated October 4, 2017 the Clerk's office of the Commission instructed the Company to publish a Notice of Hearing and Prefile Testimony Deadlines ("Notice") in newspapers of general circulation in the area affected by the Commission's annual review of the Company's fuel purchasing practices and policies by January 5, 2018. The letter also instructed the Company to furnish the Notice to its customers by U.S. Mail, or by electronic mail, by January 25, 2018. The Notice indicated the nature of the proceeding and advised all interested parties desiring participation in the scheduled proceeding of the manner and time in which to file appropriate pleadings.

On December 5, 2017, the Company filed with the Commission Affidavits demonstrating that the Notice was duly published in accordance with the instructions set forth in the Clerk's Office, October 4, 2017 letter. On December 15, 2017, the Company filed with the Commission an Affidavit demonstrating that the Notice was appropriately furnished to each affected customer.

Petitions to Intervene were received from CMC Steel South Carolina, South Carolina Coastal Conservation League ("CCL"), South Carolina Energy Users Committee, South Carolina Solar Business Alliance, LLC ("SBA"), Southern Alliance for Clean Energy ("SBA"), and Southern Current, LLC. The Petitions to Intervene were not opposed by SCE&G and no other parties sought to intervene in this proceeding. The South Carolina Office of Regulatory Staff ("ORS") is automatically a party, pursuant to S.C. Code Ann. Section 58-4-10(B) (2015).

III. HEARING

In order to consider the merits of this case, the Commission convened a Hearing on this matter on April 10, 2018, with the Honorable Swain E. Whitfield presiding. SCE&G was represented by K. Chad Burgess, Esquire, Matthew W. Gissendanner, Esquire and Benjamin P. Mustian, Esquire. The SBA was represented by Richard L. Whitt, Esquire and Benjamin L. Snowden, Esquire. Additional counsel of record for SBA, Timothy F. Rogers, Esquire, was excused from appearing by the Chairman. Southern Current, LLC was represented by Richard L. Whitt, Esquire. South Carolina Energy Users Committee was represented by Scott Elliott, Esquire. CMC Steel South Carolina and its counsel of record were excused from attending and did not appear at the Hearing. CCL and SACE were represented by Katie C. Ottenweller, Esquire. ORS was represented by Andrew M. Bateman, Esquire and Jenny Pittman, Esquire.

IV. REVIEW OF THE EVIDENCE

In support of the revised PR-2 tariff submitted for Commission approval by the Company, SCE&G Witness Joseph M. Lynch testified to the Company's methodology for calculating the avoided energy and avoided capacity costs for solar QFs under the Public Utilities Regulatory Policy Act, 16 U.S.C. §§ 824a-3, *et seq*. ("PURPA").. The parties presented evidence on the following topics related to avoided cost and the PR-2 tariff: SCE&G's proposed revision of the PR-2 tariff to include only rates for solar qualifying facilities ("QFs"); SCE&G's use of a solar-

specific generation profile to calculate avoided energy and capacity costs; SCE&G's calculation of avoided energy costs; and SCE&G's calculation of avoided capacity costs, including in particular its reliance on a new 21% winter reserve margin policy, and its reliance on the proposed resource plan included in Dr. Lynch's direct testimony.

A. Limitation of PR-2 Rates to Only Solar Facilities

1. SCE&G Testimony

In his direct testimony, SCE&G Witness Lynch describes the Company's proposal to limit the availability of the proposed PR-2 rate to solar QFs only, and to calculate avoided costs for energy and capacity under PR-2 using a solar-specific generation profile. QFs not eligible for the new tariff (e.g. wind, biomass, or cogeneration facilities) would not be eligible for standard rates and would be required to negotiate avoided cost rates and a power purchase agreement ("PPA") with the Commission. The Company cites, as a rationale for this change to the approved tariff, the fact that an additional 865 megawatts ("MW") of solar QF capacity have come under contract to deliver power to the Company since the last fuel hearing.

Witness Lynch acknowledged at the hearing that the proposed PR-2 rate would not be appropriate for many kinds of QFs, including solar + storage, wind, biomass, or cogeneration. Dr. Lynch also agreed that the proposed PR-2 tariff would provide no incentive for the addition of storage to QF solar facilities, even though storage provides system benefits and avoids additional costs. Hearing Tr. at E-94:16-E-95:2. Such QFs could still obtain contracts with negotiated rates equal to avoided cost. Witness Lynch testified that the Company had offered contracts with negotiated rates to QFs for 35 years prior to the advent of the PR-1 and PR-2 tariff. Dr. Lynch acknowledged, however, that in that time only one QF ever obtained a contract with the Company.

2. Intervenor Testimony

In direct testimony, Witness Horii stated his view that it is reasonable for the Company to offer a PR-2 rate specific for solar facilities. However, Witness Horii expressed concern about the Company's failure to produce calculations of long-run avoided costs for non-solar QF resources. Hearing Tr. at __ (examination of Mr. Horii) (transcript unavailable). In part, this was because the Company's failure to do so makes it impossible to understand what capacity values would have been. This is important because of the significant change in capacity rates that would be expected as a result of the failure of construction of the additional units at the V.C. Summer project.

At the hearing, Witness Horii agreed with Dr. Lynch's assessment that the proposed PR-2 rate would not be appropriate for many kinds of QFs, including solar + storage, wind, biomass, or cogeneration.

SBA Witness Dr. Johnson testified that the Company's proposal to offer a technology-specific avoided cost rate is problematic. Such a rate ignores the inherent variability between different facilities of the same generation type – variability that results in differences in the volume and timing of electrical output. Johnson Surrebuttal at p. 32. In addition, requiring technology-specific rates to be adopted or negotiated before a QF is allowed to experiment with a new technology will inevitably impose additional regulatory uncertainty and costs, which will discourage innovation and competitive risk taking. *Id*. at 33. In Dr. Johnson's opinion it is better to offer "technology-agnostic" rates that are more flexible and provide more accurate price signals to QFs.

In response to Dr. Lynch's suggestion that non-solar QFs can simply obtain negotiated rates, Dr. Johnson testified that negotiated rates are not a viable alternative to well-designed, technology-agnostic standard offer tariffs. Johnson Surrebuttal at p. 34. There are valuable benefits from clear market signals and competition for South Carolina rate payers, including reduced transaction costs and easier contract negotiations.

3. The Commission's Conclusions

The Commission has previously held, with the support of the Company, that it is reasonable to offer standard PR-2 rates to all QFs, regardless of their output characteristics. See Docket No. 2017-2-E, Order No. 2017-246 at 17-18. Given the increased importance of solar generation, it would not be unreasonable to offer a solar-specific QF rate, assuming it is based on an appropriate solar profile that accurately reflects the actual characteristics of all QF's subject to the rate. However, that standard has not been met by the Company in this proceeding. And even though there are not currently a significant number of non-solar QFs seeking to contract under the PR-2 rate, it is not reasonable to do away with standard rates for such QFs. Requiring negotiated rates for non-solar or solar + storage QFs – the alternative proposed by Dr. Lynch – is not an adequate solution to these concerns, because it will create unreasonable barriers to QF investment and contract formation. Witness Horii and Dr. Johnson both testified about these problems. Horii Direct testimony at 22:16-17; Johnson Surrebuttal testimony at 33; Hearing Tr. at __ (Johnson response to Commissioner questions), (final transcript not available).

Dr. Lynch's testimony that the Company did not offer standard rates prior to the advent of the PR-1 and PR-2 tariff does not negate concerns about negotiated rates. According to Dr. Lynch, very few PPAs with QFs were successfully negotiated during this 35 year period. QF investment and contract formation increased significantly once the Company published a QF tariff with standard offer rates.

B. Avoided Energy Rates

a. SCE&G Testimony

Witness Lynch explained that the Company uses a Difference in Revenue Requirements ("DRR") method to determine the long-run avoided costs of the Company over its 15-year Integrated Resource Plan ("IRP"). The DRR method involves comparing the Company's revenue requirements between a "base case" and a "change case." The base case is defined by SCE&G's "existing fleet of generators and the hourly load profile to be supplied by these generators." Lynch Direct Testimony at 4. "The change case is the same as the base case except that the hourly loads are reduced by a 100 MW profile[.]" *Id*.

Unlike in previous years, SCE&G is no longer using a "round-the-clock" methodology to subtract 100 MW every hour of the base case load profile and then use four time-of-use periods with peak and off peak seasons and peak and off-peak hours within each season to derive four avoided energy costs. Lynch Direct Testimony at 8-9. Instead, the Company is proposing to use a "solar methodology" to subtract a 100 MW solar profile from the base case. As a result of this change, the Company proposes to reduce avoided energy costs by $4.85 per MWh. *Id.* at 10-13.

On cross-examination, Witness Lynch acknowledged that he had previously testified, in the 2016 and 2017 dockets, that calculation of avoided costs based on a solar-only profile would not be appropriate. This was due in part to "significant" variations in the generation profile of different solar facilities, which can arise from the different operational characteristics of the facility (e.g. tracking or non-tracking, panel tilt and orientation, efficiency, and inverter properties). Hearing Ex. 7, Lynch Rebuttal Testimony in Docket No. 2017-2-E, at 3:12-16; Hearing Tr. at E-63:1-8. Dr. Lynch did not dispute his prior testimony (from just last year) that: "using a 100 MW solar profile … would not provide an accurate estimate of the Company's avoided energy costs." Hearing Ex. 7 at 3:9-11. In fact, during cross examination Dr. Lynch acknowledged that every solar farm has a different cost impact on the system. Hearing Tr. at E-66:17-18. Dr. Lynch did not claim that that the proposed solar-only rate adequately accounts for these differences, or overcomes the problems he noted in past proceedings. Nor did he testify or suggest that these differences are not significant, or would not have an impact on rates.

Witness Lynch testified at the hearing that the solar profile was generated based on data from a single solar farm, in a single year. Hearing Tr. at E-66:21-24. Dr. Lynch said that this was all the data that was available to the Company at this time.

b. Intervenor Testimony

In his direct testimony, Witness Horii opined that it was not unreasonable to calculate avoided costs based on a solar-only profile. Witness Horii testified at the hearing that his conclusion that the Company's calculation of avoided cost rates based on a solar-only profile assumed that the profile used actually matched the sources of generation that it was intended to represent. Hearing Tr. at __ (examination of Mr. Horii) (transcript unavailable). Witness Horii went on to say that in analyzing the Company's rate calculations, he was not aware of how the

Company formulated the solar profile it used in its rate calculations, because that information was not provided in the Company's testimony, work papers, or discovery responses. *Id*.

Witness Horii testified that the industry-standard approach to devising a "solar shape" for rate calculations is either to use a publicly-available source of information like the National Renewable Energy Laboratory's PVWatts[1] simulator (which uses local weather data to simulate solar output), or to use data from the utility's system if there is "enough metered solar on the system to get specific information." *Id.* Witness Horii clarified that it would not be appropriate for a utility to generate a profile based on data only from only one location, and that data from locations throughout the service area impacted by the rates would be required in order to adequately account for geographic diversity. *Id*.

Witness Johnson asked that the Commission reject the Company's proposal to reduce energy rates despite circumstances where heat rates have increased, remove time-related price signals, and eliminate standard offer rates for non-solar generators larger than 100 kW. He testified that the Company's proposal to base rates on a single generic solar profile, is inadequate because it does not "precisely match QF rates to avoided costs" or "ensure greater fairness to different types of generators." Johnson Direct Testimony at 93; *see also* 92-94. Like Dr. Lynch, Dr. Johnson and Witness Horii testified that there can be significant variations in the generation profiles of different solar farms. Johnson Surrebuttal Testimony at p. 33. At the hearing, Witness Horii acknowledged the potential for these types of differences, and that in some cases the variations may be significant. *Id*.

Based on concerns about variation among the output of solar farms, Dr. Johnson recommended a "technology-agnostic" rate, based on the day of the year and time of day. Johnson Surrebuttal Testimony at pgs. 32-33. Witness Horii agreed that hour-by-hour rates are the ideal way to accurately calculate the avoided costs of solar as well as other generating resources. *Id*.

In 2016 and 2017, SCE&G addressed the lack of sufficient data to generate an accurate solar profile by calculating avoided energy costs by time period and season, and paying every QF for the energy they sell during each rate period, regardless of their profile. Ex. 7 at 3:16-19. Witness Horii and Dr. Johnson agreed with that previous solution (time-of-day pricing) while

[1] PVWatts is an online software tool (http://pvwatts.nrel.gov/) for estimating the energy production and cost of grid-connected photovoltaic energy systems.

noting that, ideally, pricing would be refined to reflect hour-by-hour, day-by-day differences in avoided costs. This leads to accurate calculations of avoided cost that are applicable to QF's with widely different output characteristics. Johnson Direct at 47:2-7, 93:2-94:15, 119:15-19; Johnson Surrebuttal at 9-10, 27. Mr. Horii agreed, stating: "Ideally, what we'd like to see are hourly avoided cost rates, so then the exact pattern of the actual generation can be used to come up with the compensation."

c. The Commission's Conclusions

Based on the evidence presented, the Company has not met the burden of demonstrating that its avoided energy cost calculations, based on a solar-only profile, are reasonable. In previous Orders the Commission has rejected, at the Company's urging, the use of a solar profile to develop avoided costs. Order No. 2017-246 at 18; Order No. 2016-297 at 13-14. In its 2016 and 2017 orders, the Commission specifically found that "using a 100 MW solar profile would not provide an accurate estimate of the Company's avoided energy costs," even if the rate was solar-specific. Order No. 2016-297 at 14; Order No. 2017-246 at 18. These rulings were based primarily on Dr. Lynch's prior testimony (which he acknowledged at this hearing) that it would be inappropriate to develop avoided costs, even for solar facilities, using a single solar-specific generation profile because "generation profiles can be significantly different depending upon the characteristics of the facility." Hearing Tr. at E-62:21-25. The Company has not provided any evidence to suggest it has solved the problems with a solar-only rate that were previously identified by Dr. Lynch. *Id.* at E-64:3-7.

The Commission concludes that while it is reasonable in concept to calculate avoided cost rates based on a solar-specific generation profile, costs so calculated are only reasonable if the solar profile used captures, with reasonable accuracy and allowing for the considerable variations among facilities, the actual profile of the solar projects subject to those rates. The testimony and work papers provided by the Company indicated that Dr. Lynch used a "SC solar profile" to generate avoided costs, but did not provide any details concerning this profile. Witness Lynch clarified on cross-examination that the Company used a single year's worth of generation data from a single, unidentified solar farm to generate its profile. Given the fact that the Company generated its solar profile based on data from a single project, about which nothing is known (e.g. the size, location, configuration, or panel efficiency), the only relevant evidence in the record indicates that the profile used by the Company is probably <u>not</u> representative of the

actual characteristics of some solar facilities. The Commission cannot conclude that the rates calculated based on this profile are reasonable, and so the evidence in this proceeding does not support a reversal of the Commission's past findings against using a 100 MW solar profile to develop the Company's avoided energy costs.

Further consideration of avoided costs based on solar profiles should wait until the Company has more data concerning the actual operation of solar farms in South Carolina. In the meantime, instead of calculating a single hourly rate based on a solar profile, the Company shall submit for review and Commission approval standard offer PR-2 rates using time-of-day pricing that accurately reflects avoided energy costs on a technology-agnostic basis.

C. Avoided Capacity Rates

a. The Company's 21% Winter Reserve Margin and the Assignment of a Zero Capacity Value for Solar

i. SCE&G Testimony

Witness Lynch testified that as of 2018, the Company has adopted a new reserve margin policy calling for a 21% reserve capacity margin for winter peaks. This new policy is based on a Reserve Margin Study conducted by the Company in 2017. Based on the results in that Study, SCE&G has set a 14% summer peak reserve margin and a 21% winter peak reserve margin. Lynch Direct Testimony at 6. Dr. Lynch testified that the Company's 21% proposal is not outside of industry norms, as PJM maintains a 27% winter reserve margin. Dr. Lynch acknowledged on cross-examination that the higher reserve margin would result in higher costs to ratepayers. Hearing Tr. at E-241:7-22.

Witness Lynch testified that in the 2017 IRP and in the calculations supporting the existing PR-2 tariff, the Company assigned a 50% capacity ratio to solar generating resources. Hearing Tr. at E-184:5-19.[2] And in the 2018 IRP, the Company assigns a 35% capacity ratio to existing solar resources. *Id*. at E-186:5-E-187:1. Dr. Lynch explained that in its new rate calculations the company has assigned zero capacity value to new solar resources. This is because the Company has concluded that generating resources that do not provide capacity during winter peaks provide no capacity benefit to the system, and are not eligible for capacity payments. Lynch Direct Testimony at 15. The Company has further concluded that solar QFs

[2] At the hearing, Dr. Lynch expressed his preference for the term "capacity ratio", rather than "capacity factor" because the latter term has traditionally referred to a somewhat different concept.

do not allow the Company to avoid winter capacity acquisitions, and therefore the PE-2 capacity rate should be zero. As described by Witness Lynch, the Company's long-run avoided capacity cost rates dropped from $21.34 per kW-year in 2016, to $6.35 per kW-year in 2017, to $0 per kW-year this year.

ii. Intervenor Testimony

ORS Witness Horii testified at the hearing that although the Company had "satisfied itself" that solar provides zero capacity value, the Company had not performed calculations or provided evidence to support this conclusion. Witness Horii opined that there were "significant flaws" in the Company's analysis of this issue. Hearing Tr. at __ (examination of Mr. Horii) (transcript unavailable).

Witness Horii further testified that the "Component method" used by the Company to calculate its reserve margin is no longer an industry-standard methodology, and is not an appropriate means for calculating a reserve margin. *Id.*; Horii Surrebuttal at 9:12-10:4. Witness Horii also pointed out that the current PR-2 rates incorporate an 80% summer / 20% winter capacity weighting, and that (even if the 21% winter reserve margin is appropriate) the proposed rates effectively adopt a 0% summer / 100% winter weighting, with no value assigned to summer capacity. This is a very significant change in methodology.

Regarding the 27% PJM winter reserve margin cited by Dr. Lynch, Witness Horii pointed out that the 27% figure cited by Dr. Lynch is actually a "winter weekly reserve target," a figure that is not comparable to and serves a different purpose from the winter reserve margin at issue here. Witness Horii stated that this was an "apples to oranges" comparison and did not support the Company's position. Hearing Tr. at __ (examination of Mr. Horii) (transcript unavailable); Horii Surrebuttal at 7:16-8:23.

SBA Witness Dr. Ben Johnson testified that SCE&G is "primarily a summer peaking utility" and that instead of "reducing the QF capacity rate to zero, it would more be appropriate to increase the rate at least modestly, to be more consistent with the long run incremental cost of new capacity. Johnson Direct at 113:3-4, 121:7-9; Johnson Surrebuttal at 30. He recommended that the Commission reject the Company's proposed avoided cost rates, because they will not adequately compensate QFs, they will not encourage small power production within SCE&G's service area, and they will not achieve the goals of PURPA. Instead, he recommended the Commission require the Company to collaboratively work with ORS and other interested parties

to develop higher, more accurate QF rates. Johnson Direct at 129:6-8, Johnson Surrebuttal at 8-10.

With regard to the reserve margin issue, SACE / CCL's witness Ms. Devi Glick testified that the Company's proposed winter reserve margin is substantially higher than peers Duke Energy Carolinas, Duke Progress, Southern Company, and Santee Cooper, each of which use a winter reserve margin between 12 and 17 percent. Glick Direct at 9. Whereas the Company's methodology for determining reserve margin focused solely on the relationship between load and weather, other peer utilities utilize a more comprehensive methodology that balances physical reliability and customer costs. *Id.* at 10-11. Witness Glick recommends that the Commission require SCE&G to hire an independent firm to conduct an analysis to determine an appropriate reserve margin for both winter and summer. This study should utilize a methodology that balances physical reliability with minimizing economic costs to the customers. While that study is performed, the Commission should reject the Company's use of a 21% reserve margin and require SCE&G to use its historic 14% reserve margin.

iii. The Commission's Conclusions

The Company proposes very significant changes to its methodology for calculating avoided capacity costs in this proceeding. Specifically, the Company is assigning zero avoided capacity value to solar, based on the fact that the Company has adopted (as of this year) a new policy calling for a 21% reserve margin.

The evidence presented does not support a reversal of the Commission's past findings that it is reasonable to assign 80% of the avoided capacity costs to summer season and 20% to the winter season. Nor has the Company presented evidence sufficient to justify a change in the capacity value of solar QFs from 50% of its nameplate capacity (the ratio relied on in calculating the current rates) to 0% (which is effectively the capacity ratio assumed by the PR-2 rates), or 35% (the capacity ratio assigned in the IRP to existing solar), or any other specific number.

The Commission finds the testimony of Witnesses Horii and Glick to be persuasive concerning the winter reserve margin and the existence of avoided capacity costs in the summer. Horii Direct at 10:1-17, 21:5-12; Horii Surrebuttal at 3:10-13, 4:9-13, 5:11-14, 7:9-15, 8:1-20, 14:11-17, 15:5-9. Among other flaws, the Company has failed to consider the cost of higher reserve margins to ratepayers, and the Component methodology used by the Company to calculate its reserve margins is at odds with the rest of the industry. The 21% reserve margin

selected by the Company is also significantly higher than peer utilities' reserve margins. And as Dr. Lynch acknowledged an increase in the reserve margin will result in increased costs to ratepayers. Hearing Tr. at E-241:7-22.

The Commission accordingly rejects the 21% winter reserve margin as a basis for calculating avoided capacity costs. The Commission also finds persuasive Witness Glick's suggestion that the Company and its ratepayers would benefit from an independent evaluation of SCE&G's summer and winter reserve margins.

b. The Company's Resource Plan as a Basis for Capacity Costs

i. SCE&G Testimony

Witness Lynch testified that the "base case" for the Company's implementation of the DRR methodology was the resource plan submitted as exhibit JML-1 to his direct testimony. Under the DRR methodology, the selection of base case and change case are primary drivers of avoided capacity costs. Consequently it is important to have an accurate base case, because having an accurate base case yields more accurate avoided cost calculations. Hearing Tr. at E-20:20-24, E-22:14-20.

Witness Lynch acknowledged on cross-examination that the resource plan includes a number of assumptions that are of questionable accuracy. For example, the base case assumes that the Company will procure the Columbia Energy Center (a 504 MW gas-fired baseload plant) in 2018, and will construct another baseload plant in 2023 and a peaker in 2031. Dr. Lynch testified that the Company is not committed to the construction of these plants in 2023 and 2031, and he provided no testimony that the Company is fully committed to the acquisition of the Columbia Energy Center. Hearing Tr. at E-25:16-24, E-26:6-27:2.

Witness Lynch also acknowledged that the Company did not consider, in formulating the resource plan in the base case and change case, any options for addressing peak demand other than construction of baseload or peaker plants. Specifically, it did not consider the purchase of additional capacity or firm purchased power (the Company is already purchasing firm capacity from merchant generating plants), expansion of its demand response programs, or any other options. Hearing Tr. at E-30:22-25, E-32:12-18. Witness Lynch further acknowledged on cross-examination that the Company's resource plan was formulated using a single Excel spreadsheet, and that the Company had not conducted any kind of analysis or simulation to optimize the long-term resource plan. Hearing Tr. at E-208:18-209:10.

Witness Lynch testified that the assumption that the V.C. Summer nuclear plants would be part of the Company's resource portfolio likely drove capacity rates down in the last fuel case. Hearing Tr. at E-32:12-18. Ultimately those assumptions proved incorrect, and it is likely that the Company's actual avoided costs rose after the V.C. Summer nuclear plant expansion was cancelled and the planned units were removed from the utility's generation plan. *Id*. at E-40:18-41:2, E-42:3-9.

Witness Lynch confirmed that the Company produced some preliminary estimates of its capacity costs shortly after the V.C Summer units were cancelled, which indicated a significantly higher capacity cost per kW/year. Hearing Tr. at E-51:3-23. Nevertheless, the Company did not file an increased avoided cost rate at that time because management did not approve a revised resource plan. Hearing Tr. at E-52:13-53:5. Similarly, Dr. Lynch confirmed at the hearing that the Company did not produce these or any other avoided capacity cost calculations to any party in discovery. *Id.* at E-10:22-25.

ii. Intervenor Testimony

Witness Horii testified that the scope of his review of the Company's avoided cost calculations did not specifically include the resource plan that served as the base case for the company's calculations, and that he did not set out to "look behind" any of the assumptions in that plan. Hearing Tr. at __ (examination of Mr. Horii) (transcript unavailable). However, he did express significant concerns about whether that resource plan was "optimal." And Witness Horii agreed with Dr. Lynch's assessment that inaccurate assumptions in the base case yield inaccurate calculations of avoided cost.

Witness Johnson recommended rejecting the Company's QF rate proposals because they were derived from a sub-optimal "Base" expansion plan that does not minimize revenue requirements. Johnson Direct Testimony at 40, 69-70; Johnson Surrebuttal Testimony at 8. In particular, he pointed out that SCE&G has not evaluated or included additional Demand Side Management (above and beyond the limited amount included in the resource plan) or firm capacity purchases that are specifically targeted at unusually cold winter mornings: "Because the 'Base' expansion plan excludes or ignores these types of opportunities (as with the modeling that was done in this proceeding), the avoided costs that are calculated using the DRR method will be underestimated." Johnson Surrebuttal Testimony at 12.

Witness Glick also criticized the Company's incorporation of a proposed 540 MW combined cycle plant in 2023 into its avoided cost calculations. She testified that this is particularly inappropriate because the Company has not tested a range of other scenarios; has not modeled the cost of its resource plan; and has not allowed DERs to compete with or displace the CC or other higher cost resources. Glick Direct Testimony at 13.

iii. The Commission's Conclusions

The Commission notes that although Witness Lynch presented an expansion plan as the putative basis for avoided cost calculations, the Company did not actually perform any avoided capacity cost calculations based on this expansion plan. Rather, the Company concluded that solar resources have no capacity value and ceased its inquiry there. However, because the Commission finds unreasonable the Company's conclusion that solar resources have no capacity value and is directing the Company to more accurately calculate its avoided costs, the Commission clarifies that a calculation of avoided costs based on the resource plan submitted with Witness Lynch's testimony would not be reasonable, unless the Company demonstrates that the resource plan itself has been optimized to a reasonable degree. Based on the evidence in the record, the Company has not demonstrated that the resource plan is reasonable. To the contrary, the evidence indicates that there are several flaws with the resource plan, which potentially could impact the avoided cost calculations.

In formulating its resource plan, the Company did not fully evaluate several relevant generation expansion options, including firm purchases that target specific hours or seasons, increased reliance on demand side management and a winter peak clipping program that increases in scale as demand grows. Johnson Direct at 41:9-12, 68:17 - 73:9, 118:1 - 119:12; Johnson Surrebuttal at 13-14, 29. In sum, the Company failed to "optimize" its resource plan in the base case and change cases, as the DRR methodology requires. Hearing Tr. at E-208:18-209:10, 209:16-211:21 (testimony of Witness Lynch); FERC Order No. 69 at n. 6.

In all, the Company has failed to meet its burden of showing that the capacity component of the proposed PR-2 tariff is reasonable, and therefore it will not be approved. The Commission agrees with the recommendation of ORS Witness Horii that the Company should be required to provide an estimate of long-run avoided capacity cost and the calculation for the long-run avoided capacity costs. In addition, ORS and other parties should be allowed to review and provide comment to the Commission based on SCE&G's estimate and calculation. Horii Direct Testimony at 22:6-9.

D. Remedy

The various problems with the Company's calculation of avoided cost rates, as identified above, raise the question of what the Commission should require the company to do. After due consideration of the evidence presented, the Commission concludes that:

a. The Company must submit a revised rate schedule, following methodologies as approved in this Order, for review by the parties and approval by the Commission.

b. Even if the Company's calculation of energy costs were reasonable, it would not be appropriate to update PR-2 energy rates without also updating capacity rates. Evidence at the hearing showed that actual capacity rates probably diverge significantly from the approved capacity rates because of the failure of the additions at the V.C. Summer nuclear plant, and the resulting impact on the company's resource plan and capacity needs. Given these changed circumstances, it would not be appropriate to update the PR-2 energy rates without also updating capacity rates.

V. FINDINGS OF FACT

1. Notwithstanding the fact that the Company continues to use a form of the Difference in Revenue Requirements ("DRR") methodology for calculating avoided costs, the Company proposes to make a number of very significant changes to the implementation of the DRR methodology previously approved by the Commission. These include: (1) restricting the availability of PR-2 rates to solar QFs; (2) calculating avoided energy and capacity costs based on a solar-specific generation profile; (3) calculating capacity costs based on a 21% winter reserve margin requirement; (4) abandoning the 80% / 20% summer/winter capacity weighting approved by the Commission in docket nos. 2016-2-E and 2017-2-E, in favor of a 100% winter /

0% summer capacity weighting; (5) assigning zero avoided capacity value to solar; and (6) changing the frequency of PR-2 rate updates from no less than twice annually to annually.

2. The methodological changes proposed by the Company are not required by any change in circumstances with regard to QF power in South Carolina, and the Company has failed to demonstrate that these changes are necessary.

3. The Company's proposal to limit the standard offer PR-2 rate to solar facilities is neither reasonable, nor prudent, nor necessary.

4. There is significant variation among the "generation profiles" of different solar energy facilities, based on such factors as the location and configuration of the facility. This variation can have a significant impact on the actual energy and capacity costs that may be avoided by solar facilities.

5. It is unreasonable for the Company to calculate avoided energy or capacity costs using a solar generation profile that does not reflect, with reasonable accuracy, the characteristics of solar QFs likely to contract under the proposed rates. The evidence in the record indicates that the solar profile used by the Company to calculate its avoided costs does not meet this standard.

6. The Company has failed to meet its burden of showing that its proposed energy rates are reasonable.

7. The proposed PR-2 rate is not appropriate for non-solar QFs, or for solar generating facilities that include energy storage.

8. Requiring non-solar (or solar + storage) QFs to pursue negotiated rates with the Company imposes undue burdens on the development of such resources and is inappropriate.

9. It is appropriate for the Company to continue offering standard rates on the PR-2 tariff to non-solar (and solar + storage) QFs. Avoided cost rates reflected in the tariff shall reflect hour-by-hour, technology-agnostic variations in avoided costs.

10. The Company has failed to meet its burden of showing that its proposed capacity rates are reasonable.

11. The Company has not demonstrated that the assignment of zero capacity value to solar QFs is reasonable.

12. The Company has not provided adequate evidence concerning the relationship between nameplate solar capacity and system peak loads, and has not demonstrated that a change to the current capacity value of 50% for solar resources is appropriate.

13. The evidence does not show that a 21% reserve margin is reasonable, and the calculation of avoided costs based on a 21% winter reserve margin and a 14% summer reserve margin is unreasonable.

14. It would not be reasonable to calculate avoided capacity costs based on the resource plan submitted with the Company's prefiled testimony.

VI. CONCLUSIONS OF LAW

After hearing the evidence and testimony of the witnesses, the Commission finds and concludes that SCE&G's requests pursuant to S.C. Code Ann. § 58-27-865 and PURPA Section 210 regarding its avoided cost rates offered in PR-1 and PR-2 are not reasonable or prudent as proposed, given the evidence introduced by the SBA in the expert testimony of Dr. Johnson, by CCL and SACE in the expert testimony of Ms. Glick, by ORS in the expert testimony of Witness Horii, and the testimony of the Company's witness Dr. Lynch on cross-examination.

IT IS THEREFORE ORDERED THAT:

1. The Company's Avoided Cost Tariffs PR-1 and PR-2 are not approved as proposed by the Company, and are subject to conditions in Ordering paragraphs 2(a) and (b) below;
2. Within 90 days, the Company shall submit for review and Commission approval standard offer PR-2 rates that are applicable to all QFs, including solar + storage, wind, biomass, and cogeneration, in the current docket.
    a. For its Avoided Energy Calculations, the Company shall submit for review and Commission approval standard offer PR-2 rates using time-of-day pricing that accurately reflects avoided energy costs on a technology-agnostic basis.
    b. For its Avoided Capacity Calculations, the Company shall:
        i. continue to use the 80% / 20% summer / winter capacity weighting approved in previous fuel dockets; or produce evidence to demonstrate that another capacity weighting is appropriate;
        ii. continue to follow the 14% across-the-board reserve margin policy that was employed in calculating the currently-effective PR-2 rates;
        iii. continue to assign a 50% capacity factor to solar resources, or demonstrate that another capacity factor is appropriate; and

iv. calculate avoided costs using an updated resource plan that is optimized, based upon an evaluation of all relevant capacity options (and alternative combinations of these options), including increased reliance on demand response programs, firm power purchases, and the purchase or acquisition of new company-owned generating resources

3. The Company shall conduct a new reserve margin study using an updated winter peak load forecast and a more widely used tool, which balances risk and ratepayer costs, which will be used to inform avoided cost rates in the 2019 fuel cost filing. In the interim, the Company shall retain its 2017 reserve margin of 14 % and shall not adopt a 21% winter reserve margin.

BY ORDER OF THE COMMISSION:

_____
Swain E. Whitfield, Chairman

ATTEST:

_____

_____, Commissioner

(SEAL)